

**65055**  
Basaltic Impact Melt  
500.8 grams



Figure 1: Photo of 65055 showing large zap pit. Cube is 1 cm. S72-43869.

### **Introduction**

According to the Apollo 16 Catalog by Ryder and Norman, 65055 is an aluminous, basaltic impact melt. It is coherent and appears to be homogeneous throughout. It has been determined to be 3.96 b.y old by the Ar/Ar plateau technique.

### **Petrography**

Vaniman and Papike (1980) included 65055 in their study of “highland basalts”. It has an intergranular, subophitic texture with euhedral to subhedral laths of plagioclase enclosing anhedral pyroxene (figure 2). There are rare anhedral clasts of plagioclase that are reported to have shock features(?). Pyroxene crystals are chemically zoned (figure 3). Metal, troilite, ilmenite and mesostasis are found in the interstices. Olivine is not reported. Jessberger et al. (1977) also give a brief description.

### **Mineralogical Mode for 65055**

	Vaniman 80
Olivine	-
Pyroxene	27.6
Plagioclase	68
Opagues	1.8
Meostasis	2
Glass	tr.

### **Chemistry**

Clark and Keith (1973) determined K, U and Th for the bulk sample. Norman et al. (2010) confirmed earlier analyses by Christian et al. (1976), Boynton et al. (1976) and Wasson et al. (1977). There is a high content of meteoritic siderophile elements Ni, Co, ir and Au (table).

### **Radiogenic age dating**

Jessberger et al. (1977) determined the age of two portions of 65055 by Ar/Ar plateau technique (3.96 and  $3.95 \pm 0.02$  b.y.). No plateau diagrams are given. Reimold et al. (1985) reported Sr isotopic data (whole rock).

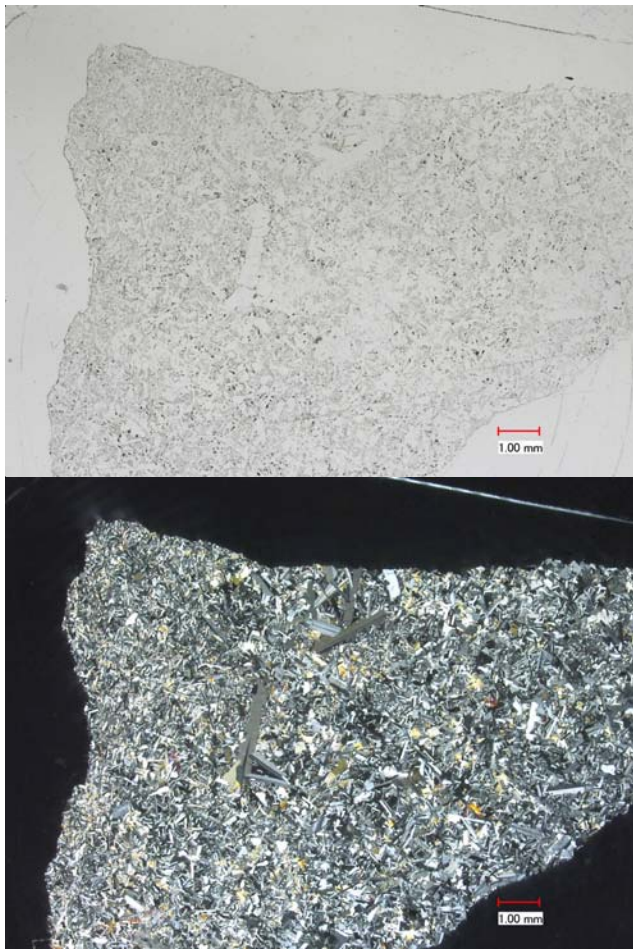


Figure 2: Photomicrographs of 65055, 16 by C Meyer @20x

### Cosmogenic isotopes and exposure ages

Jessberger et al. (1977) reported an  $^{38}\text{Ar}$  exposure age of  $2.3 \pm 0.5$  m.y. Clark and Keith (1973) determined the cosmic-ray-induced activity as  $^{22}\text{Na} = 31$  dpm/kg,  $^{26}\text{Al} = 109$  dpm/kg,  $^{54}\text{Mn} = 3$  dpm/kg,  $^{56}\text{Co} = 5$  dpm/kg and  $^{46}\text{Sc} = 0.9$  dpm/kg.

### Processing

A slab was cut through the middle of 65055 (figures 6 and 7). There are nine thin sections.

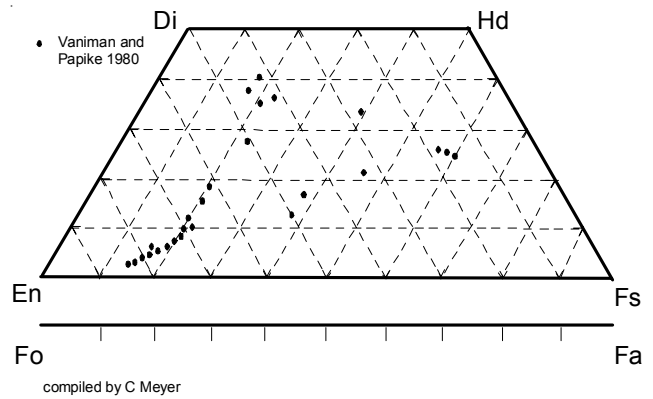


Figure 3: Pyroxene composition of 65055 (Vaniman and Papike 1980).

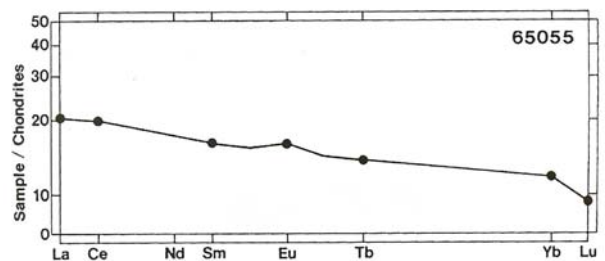


Figure 4: Normalized rare-earth-element diagram for 65055 (Ryder and Norman 1980).

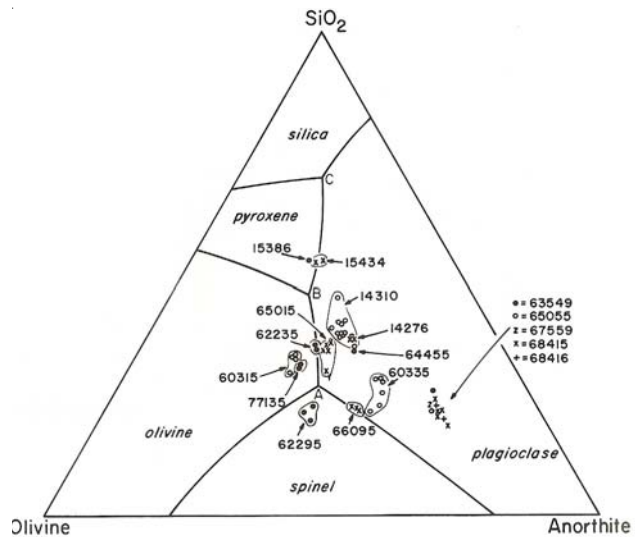


Figure 5: Composition of 65055 plotted on "Walker" diagram.

### Summary of Age Data for 65055

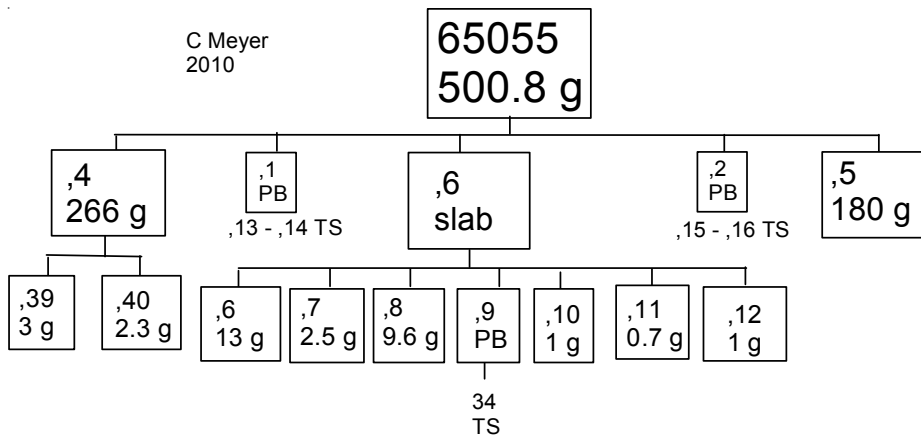
	Ar/Ar
Jessberger et al. 1977	$3.96 \pm 0.02$ b.y
	$3.95 \pm 0.02$
Caution:	

**Table 1. Chemical composition of 65055.**

reference weight	Boynton76	Norman2010	Clark73 whole	Christian76	Wasson77
SiO <sub>2</sub> %		46.1	(b)	45.41	(d)
TiO <sub>2</sub>	0.43	(a) 0.3	(b)	0.28	(d) 0.42 (a)
Al <sub>2</sub> O <sub>3</sub>	28.3	(a) 28.5	(b)	28.46	(d) 32.3 (a)
FeO	4.31	(a) 4	(b)	3.9	(d) 4.75 (a)
MnO	0.06	(a) 0.056	(b)	0.05	(d) 0.06 (a)
MgO	4.8	(a) 4.5	(b)	4.81	(d) 3.8 (a)
CaO	16.1	(a) 16	(b)	16.13	(d) 16 (a)
Na <sub>2</sub> O	0.48	(a) 0.42	(b)	0.44	(d) 0.5 (a)
K <sub>2</sub> O	0.07	(a) 0.06	(b) 0.07	(c) 0.13	(d) 0.08 (a)
P <sub>2</sub> O <sub>5</sub>				0.13	(d)
S %					
sum					
Sc ppm	7.2	(a) 8	(b)	7.2	(d) 8.3 (a)
V	35	(a) 17.9	(b)	16	(d) 23 (a)
Cr	600	(a) 610	(b)	547	(d) 680 (a)
Co	29	(a) 13.8	(b)	12	(d) 22.6 (a)
Ni	392	(a) 116	(b)	150	(d) 170 (a)
Cu		3.6	(b)	2.4	(d)
Zn	0.56	(a) 2.1	(b)	2	(d) 7 (a)
Ga	3	(a) 2.5	(b)		2.7 (a)
Ge ppb	240	(a)			100 (a)
As					
Se					
Rb		1.8	(b)	1	(d)
Sr		175	(b)	140	(d)
Y		22	(b)	19	(d)
Zr		90	(b)	72	(d)
Nb		5.7	(b)		
Mo					
Ru	26	(a)			
Rh					
Pd ppb					
Ag ppb					
Cd ppb	1.9	(a) 15	(b)		6 (a)
In ppb	6.4	(a)			6.4 (a)
Sn ppb		7	(b)		
Sb ppb		2.1	(b)		
Te ppb					
Cs ppm		0.087	(b)		
Ba	80	(a) 80	(b)	57	(d) 82
La	6.2	(a) 6.73	(b)		7.4
Ce	16	(a) 17.6	(b)		19
Pr		2.43	(b)		
Nd		10.7	(b)		11
Sm	2.6	(a) 3.08	(b)		3.3
Eu	1	(a) 1.08	(b)		1.2
Gd		3.51	(b)		
Tb	0.55	(a) 0.64	(b)		0.75
Dy		4.02	(b)		
Ho		0.87	(b)		
Er		2.34	(b)		
Tm					
Yb	2.1	(a) 2.22	(b)	1.4	(d) 2.6
Lu	0.29	(a) 0.32	(b)		0.35
Hf	2.1	(a) 2.24	(b)		2.4
Ta	0.3	(a) 0.27	(b)		0.3
W ppb					
Re ppb					
Os ppb					
Ir ppb	10.2	(a)			10
Pt ppb					
Au ppb	5	(a)			3
Th ppm	0.8	(a) 1.22	(b) 1.18	(c)	1.26
U ppm	0.41	(a) 0.32	(b) 0.311	(c)	0.3

technique: (a) INAA, (b) ICP, (c) radiation counting, (d) 'microchemical'

C Meyer  
2010





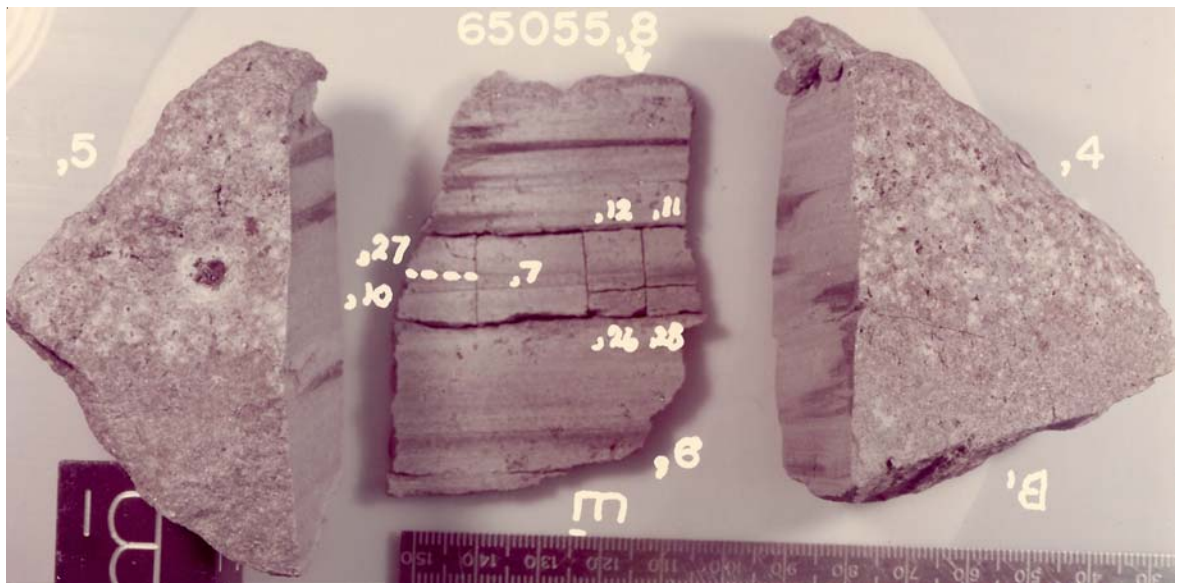


Figure 6: Processing photo of 65055 showing slab cut thru middle of sample. Cube is 1 inch. S75-22688. Compare with figure 1.

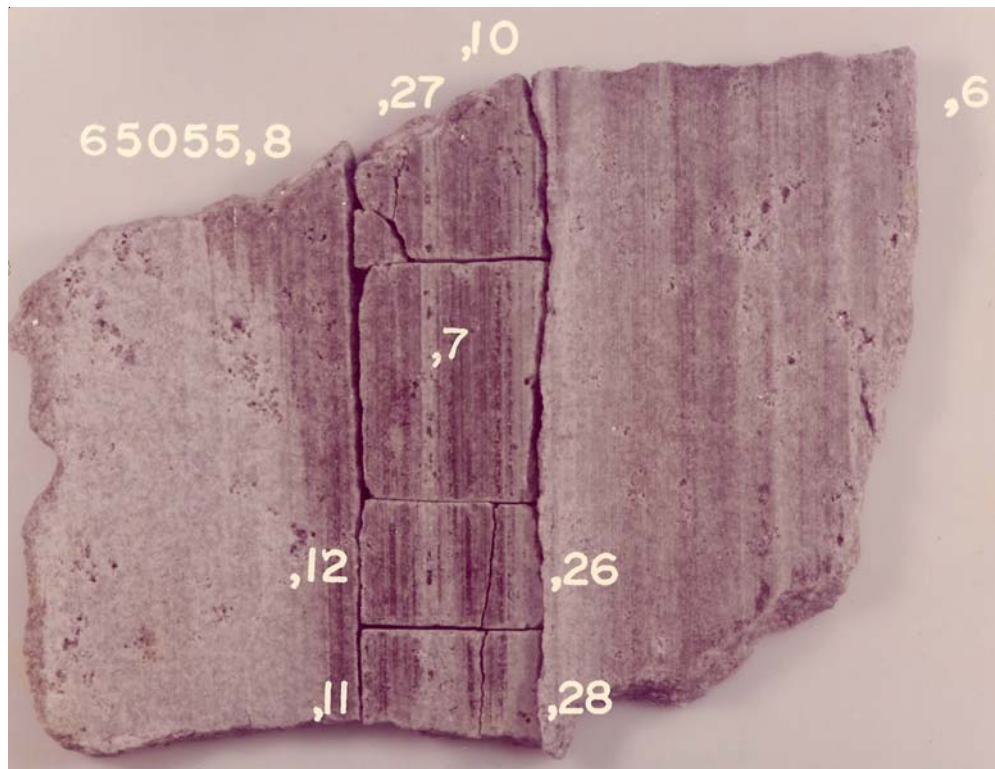


Figure 7: Slab ,8 and column cut from 65055. ,12 is 1.4 x 1 cm for scale. Saw marks are evident. S75-22689.

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